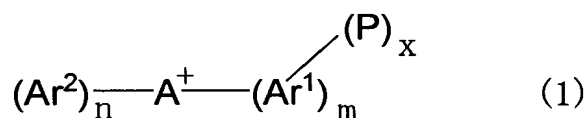


What is claimed is:

1. An onium salt compound having a cation moiety of the following formula (1),

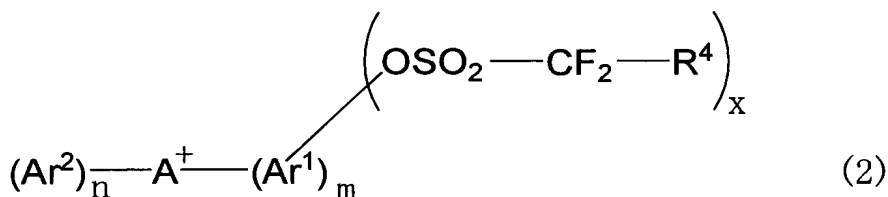


wherein A represents an iodine atom or a sulfur atom, when A is an iodine atom, m is 1 or 2 and n is 0 or 1, provided that  
10 (m+n) = 2, and x is an integer of 1-10, and when A is a sulfur atom, m is 1-3 and n is 0-2, provided that (m+n) = 3, and x is an integer of 1-15; Ar<sup>1</sup> represents a substituted or unsubstituted aromatic hydrocarbon group having 6-20 carbon atoms with a valence of 1 to (x+1) or a substituted or  
15 unsubstituted heterocyclic group having 3-20 atoms with a valence of 1 to (x+1), Ar<sup>2</sup> represents a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms or a substituted or unsubstituted monovalent heterocyclic group having 3-20 atoms, or Ar<sup>1</sup> and Ar<sup>2</sup> mutually  
20 bond together with A<sup>+</sup> in the formula to form a group possessing a cyclic structure with 3-8 atoms; and the x-number of P groups bonding to one or more of the m-number of Ar<sup>1</sup> groups individually represent -O-SO<sub>2</sub>R<sup>1</sup>, -O-S(O)R<sup>2</sup>, or -SO<sub>2</sub>R<sup>3</sup>, wherein R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> individually represent a hydrogen atom, a substituted or  
25 unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20

carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted monovalent heterocyclic group having 3-20 atoms, or a group  $-N(R')_2$ , wherein  $R'$  individually represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted monovalent heterocyclic group having 3-20 atoms, or two  $R'$  groups form, in combination and together with the nitrogen atom in the formula, a group having a cyclic structure with 3-8 atoms.

2. The onium salt compound according to claim 1, wherein A in formula (1) is a sulfur atom.

3. The onium salt compound according to claim 1, wherein P in formula (1) is  $-O-SO_2-CF_2-R^4$  and the cationic moiety has the in formula (2),

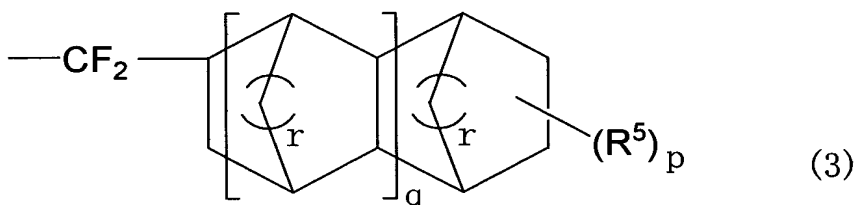


wherein A,  $Ar^1$ , m,  $Ar^2$ , n, and x are respectively the same as

A, Ar<sup>1</sup>, m, Ar<sup>2</sup>, n, and x in the formula (1) and R<sup>4</sup> represents a hydrogen atom, fluorine atom, nitro group, cyano group, or a monovalent organic group having 1-20 carbon atoms.

5            4. The onium salt compound according to claim 3, wherein A in formula (2) is a sulfur atom.

10            5. The onium salt compound according to claim 3, wherein R<sup>4</sup> in the formula (2) is a group of the following formula (3),

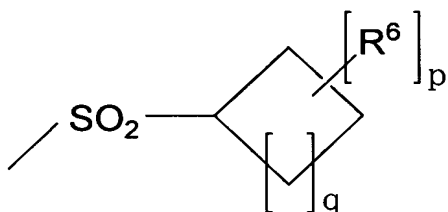


wherein R<sup>5</sup> represents a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, a substituted or unsubstituted monovalent heterocyclic group having 3-20 atoms, or a group  $\text{—N(R}^{2'}\text{)}_2\text{—}$ , wherein R<sup>2'</sup> individually represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms,

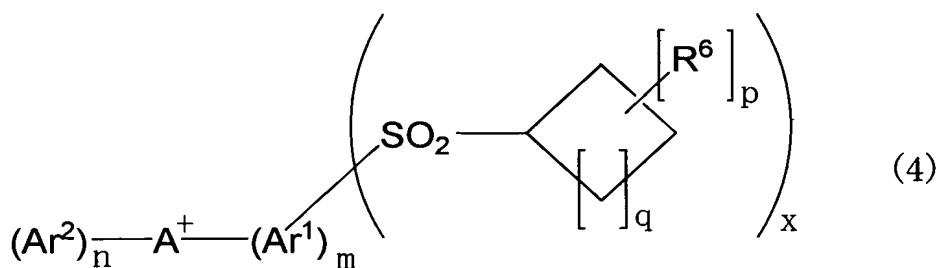
or a substituted or unsubstituted, monovalent heterocyclic group having 3-20 atoms, or two R<sup>2'</sup> groups form, in combination and together with the nitrogen atom in the formula, a group having a cyclic structure with 3-8 atoms, p is an integer of 0-16, q is an integer of 0-8, and r is an integer of 1-3.

6. An onium salt compound according to claim 5, wherein both p and q are 0 and both r's are 1.

7. The onium salt compound according to claim 1, wherein the group P in the formula (1) is represented by the following formula,



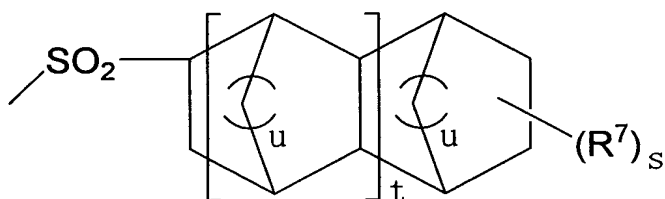
and the cationic moiety is represented by the following formula (4),



wherein A, Ar<sup>1</sup>, m, Ar<sup>2</sup>, n, and x are respectively the same as A, Ar<sup>1</sup>, m, Ar<sup>2</sup>, n, and x in the formula (1), p and q are respectively the same as p and q in the formula (3), and R<sup>6</sup>

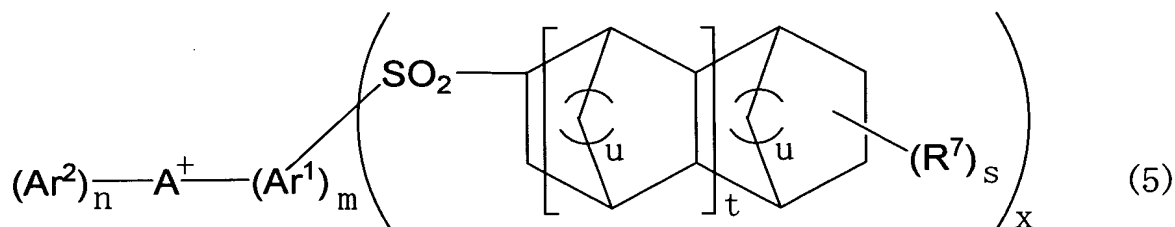
represents a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted monovalent heterocyclic group having 3-20 atoms, or a group  $-N(R^{3'})_2$ , wherein  $R^{3'}$  individually represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted, monovalent heterocyclic group having 3-20 atoms, or two  $R^{3'}$  groups form, in combination and together with the nitrogen atom in the formula, a group having a cyclic structure with 3-8 atoms.

8. The onium salt compound according to claim 1, wherein the group P in the formula (1) is represented by the following formula,



and the cationic moiety is represented by the following formula

(5),



5

wherein A, Ar<sup>1</sup>, m, Ar<sup>2</sup>, n, and x are respectively the same as A, Ar<sup>1</sup>, m, Ar<sup>2</sup>, n, and x defined in the formula (1), R<sup>7</sup> represents a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted monovalent heterocyclic group having 3-20 atoms, or a group -N(R<sup>4'</sup>)<sub>2</sub>, wherein R<sup>4'</sup> individually

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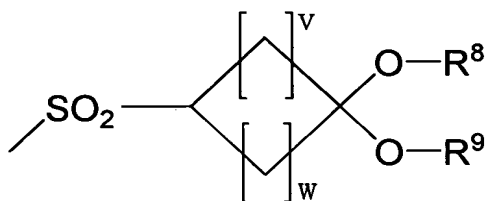
represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted, monovalent heterocyclic group having 3-20 atoms, or two R<sup>4'</sup> groups form, in combination and together with the nitrogen atom in the formula, a group having a cyclic structure with 3-8 atoms, s is an integer of 0-6, t is an integer of 0-5,

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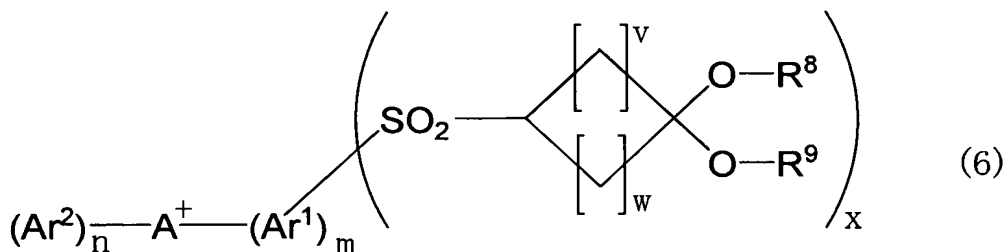
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and u is an integer of 1-3.

9. The onium salt compound according to claim 1, wherein the group P in the formula (1) is represented by the following formula,



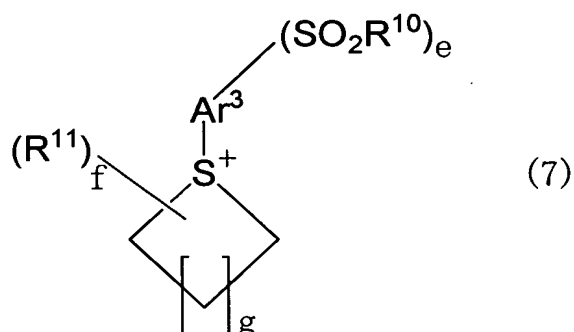
and the cationic moiety is represented by the following formula (6),



wherein A, Ar<sup>1</sup>, m, Ar<sup>2</sup>, n, and x are respectively the same as A, Ar<sup>1</sup>, m, Ar<sup>2</sup>, n, and x defined in the formula (1), R<sup>8</sup> and R<sup>9</sup> individually represent a substituted or unsubstituted alkyl group having 1-20 carbon atoms or a substituted or unsubstituted monovalent alicyclic group having 3-20 carbon atoms, or R<sup>8</sup> and R<sup>9</sup> may form, in combination and together with one carbon atom and two oxygen atoms in the formula, a group having a cyclic structure with 4-10 atoms; and v and w are respectively the integers of 0-5, satisfying the formula (v+w) ≥ 1.

10. An onium salt compound having a cation moiety of

the following formula (7),

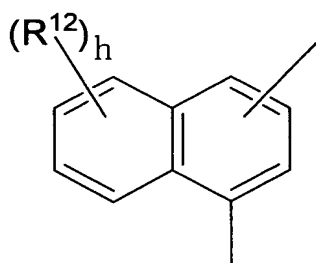


- 5 wherein  $Ar^3$  represents a substituted or unsubstituted divalent aromatic hydrocarbon group having 6-20 carbon atoms or a substituted or unsubstituted divalent heterocyclic group having 3-20 atoms,  $R^{10}$  and  $R^{11}$  individually represent a substituted or unsubstituted alkyl group having 1-20 carbon
- 10 atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted monovalent heterocyclic group
- 15 having 3-20 atoms, or a group  $-N(R^{5'})_2$ , wherein  $R^{5'}$  individually represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms,
- 20 a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted, monovalent heterocyclic group having 3-20 atoms, or two  $R^{5'}$  groups form, in combination and together with the



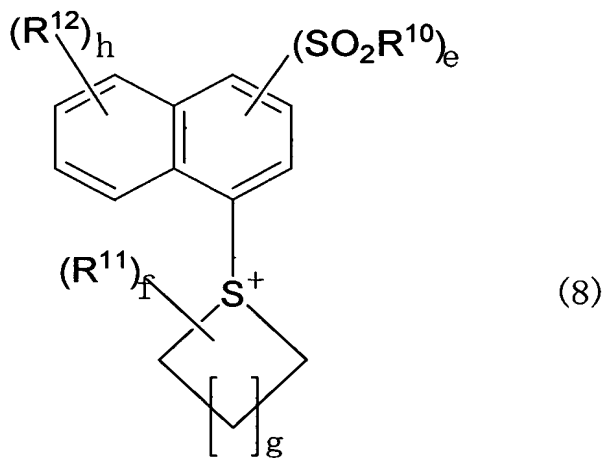
nitrogen atom in the formula, a group having a cyclic structure with 3-8 atoms, e is an integer of 1-10, f is an integer of 0-6, and g is an integer of 0-3.

- 5            11. The onium salt compound according to claim 10, wherein the group  $\text{Ar}^3$  in the formula (7) is represented by the following formula,



10

and the cationic moiety is represented by the following formula (8),

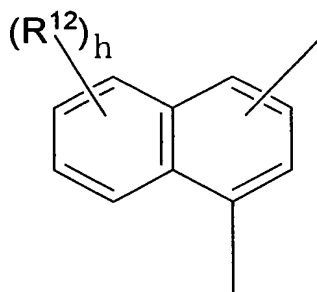


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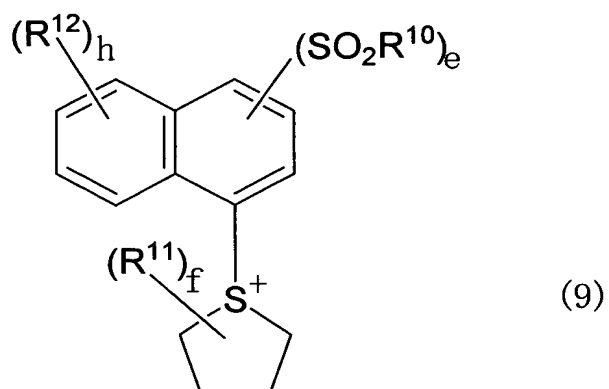
wherein  $\text{R}^{10}$ , e,  $\text{R}^{11}$ , f, and g are respectively the same as  $\text{R}^{10}$ , e,  $\text{R}^{11}$ , f, and g defined for the above formula (7),  $\text{R}^{12}$  represents a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic

hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted monovalent heterocyclic group having 3-20 atoms, or a group  $-N(R^{6'})_2$ , wherein  $R^{6'}$  individually represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1-20 carbon atoms, a substituted or unsubstituted monovalent alicyclic hydrocarbon group having 3-20 carbon atoms, an alkenyl group having 2-20 carbon atoms, a substituted or unsubstituted monovalent aromatic hydrocarbon group having 6-20 carbon atoms, or a substituted or unsubstituted, monovalent heterocyclic group having 3-20 atoms, or two  $R^{6'}$  groups form, in combination and together with the nitrogen atom in the formula, a group having a cyclic structure with 3-8 atoms, and h is an integer of 0-6.

12. The onium salt compound according to claim 10, wherein the group  $Ar^3$  in the formula (7) is represented by the following formula,



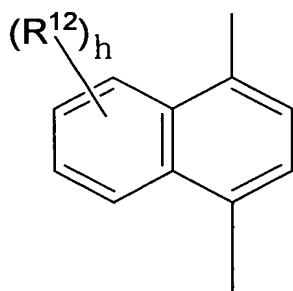
and the cationic moiety is represented by the following formula (9),



wherein  $R^{10}$ ,  $e$ ,  $R^{11}$ ,  $f$ ,  $R^{12}$ , and  $h$  are the same as  $R^{10}$ ,  $e$ ,  $R^{11}$ ,  
 5  $f$ ,  $R^{12}$ , and  $h$  defined for the above formula (8).

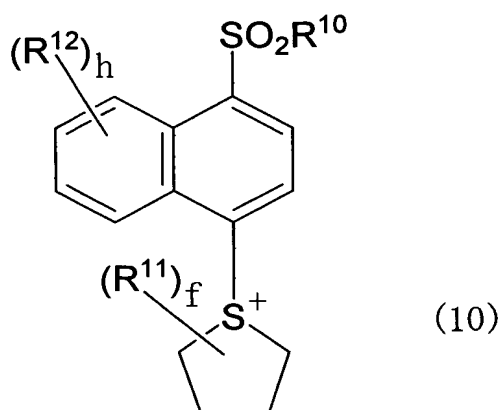
13. The onium salt compound according to claim 10,  
 wherein the group  $Ar^3$  in the formula (7) is represented by the  
 following formula,

10



$e=1$ , and the cationic moiety is represented by the following  
 formula (10),

15



wherein  $R^{10}$ ,  $R^{11}$ ,  $f$ ,  $R^{12}$ , and  $h$  are the same respectively as  $R^{10}$ ,  $R^{11}$ ,  $f$ ,  $R^{12}$ , and  $h$  defined for the above formula (8).

5

14. A positive tone radiation-sensitive resin composition comprising: (A) at least one photoacid generator selected from the onium salt compounds according to claim 1 as a photoacid generator for photoresist and (B) a resin having  
 10 an acid-dissociable group and insoluble or scarcely soluble in alkali, but becomes alkali soluble when the acid-dissociable group dissociates.

15. The positive tone radiation-sensitive resin  
 15 composition according to claim 14, wherein the onium salt compound is selected from the onium salt compounds having  $-SO_2R^3$  for the group P in the formula (1).

16. The positive tone radiation-sensitive resin  
 20 composition according to claim 14, wherein the photoacid generator is selected from the onium salt compound according to claim 3.

17. The positive tone radiation-sensitive resin composition according to claim 14, wherein the photoacid generator is at least one onium salt compound according to claim 5. 5.

18. A positive tone radiation-sensitive resin composition comprising: (A) at least one photoacid generator selected from the onium salt compounds according to claim 10 as a photoacid generator for photoresist and (B) a resin having an acid-dissociable group and insoluble or scarcely soluble in alkali, but becomes alkali soluble when the acid-dissociable group dissociates. 10

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